



August 11, 2005

L-2005-166  
10 CFR 50.59(d)

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555

Re: St. Lucie Unit 2  
Docket No. 50-389  
Report of 10 CFR 50.59 Plant Changes

Pursuant to 10 CFR 50.59(d)(2), the attached report contains a brief description of any changes, tests, and experiments, including a summary of the 50.59 evaluation of each which were made on Unit 2 during the period of June 9, 2003 through February 15, 2005. This submittal correlates with the information included in Amendment 16 of the Updated Final Safety Analysis Report submitted under separate cover.

Please contact us should there be any questions regarding this information.

Very truly yours

A handwritten signature in black ink, appearing to read 'WJ', is written over the typed name.

William Jefferson, Sr.  
Vice President  
St. Lucie Plant

WJ/tlt

Attachment

IE47

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**ST. LUCIE UNIT 2  
DOCKET NUMBER 50-389  
CHANGES, TESTS AND EXPERIMENTS  
MADE AS ALLOWED BY 10 CFR 50.59  
FOR THE PERIOD OF  
JUNE 9, 2003 THROUGH FEBRUARY 15, 2005**

## INTRODUCTION

This report is submitted in accordance with 10 CFR 50.59 (d)(2), which requires that:

- i) changes in the facility as described in the SAR;
- ii) changes in procedures as described in the SAR; and
- iii) tests and experiments not described in the SAR

that are conducted without prior Commission approval be reported to the Commission in accordance with 10 CFR 50.90 and 50.4. This report is intended to meet these requirements for the period of June 9, 2003 through February 15, 2005.

This report is divided into three (3) sections. First, changes to the facility as described in the Updated Final Safety Analysis Report (UFSAR) performed by a Plant Change/Modification (PC/M). Second, changes to the facility/procedures as described in the UFSAR, or tests/experiments not described in the UFSAR, which are not performed by a PC/M. And third, a summary of any fuel reload 50.59 evaluation.

Each of the documents summarized in Sections 1, 2 and 3 includes a 10 CFR 50.59 evaluation that evaluated the specific change(s). Each of these 50.59 evaluations concluded that the change does not require a change to the plant technical specifications, and prior NRC approval is not required.

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**SECTION 1**

**PLANT CHANGE/MODIFICATIONS**

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**PLANT CHANGE/MODIFICATION 02086**

**REVISIONS 0 & 1**

**FUEL CASK CRANE REPLACEMENT**

**Summary:**

This PC/M provides modifications to the spent fuel pool cask handling crane system. Specifically, this change package involves the installation of a new safety related 150/25 ton single-failure proof crane that is designed for handling spent fuel dry storage casks. This PC/M is for the installation of the new crane only.

Other activities related to this installation such as removal of the original crane and modification of the crane runway/support structure have been accomplished under other PC/Ms.

This evaluation included analysis of any potential impact of surrounding safety related components for accidental load drop/impact during installation and for underground utilities and plant roads impact from mobile crane and other heavy equipment transport.

Revision 1 provided for the deletion of the cask drop analysis described in UFSAR Sections 9.1.4.3.2 and 15.7.4.1.3. Since the new crane is single-failure proof, a load drop analysis is not required, as was the case with the original, non single-failure proof crane. Acknowledgement/agreement between FPL and the NRC concerning this deletion took place via license amendment 134, which was approved by the NRC in April 2004. Other Revision 1 changes were administrative in nature.

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## **SECTION 2**

### **50.59 EVALUATIONS**

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**EVALUATION SENS-00-013  
REVISION 3**

**USE OF PRC-01 RESIN IN THE CVCS LETDOWN STREAM  
TO REMOVE CO-58 CONTAMINANTS**

**Summary:**

Revisions 0, 1 and 2 were identified in the 50.59 summary report issued in 2002. Revision 3 was issued in 2004 and is thus included in this report.

This evaluation was prepared to examine the use of an additional resin material in the chemical and volume control system (CVCS) ion exchangers during the plant cooldown and refueling evolution. The material utilized is an acrylic substrate weak acid resin identified as PRC-01 that will increase the decontamination factor (DF) of the CVCS cleanup system for sub-micron sized particulates of Cobalt 58.

Particulates are not efficiently removed by resins in the current mixed bed ion exchanger and, depending on particle size, may not be removed by installed CVCS purification filters. The PRC-01 resin proposed for use has a demonstrated high affinity for corrosion products in the particulate form. Use of this resin material will assist in reducing the occupational dose incurred during refueling outages.

Revision 1 made minor modifications to the plant restrictions provided previously, to add and more precisely paraphrase UFSAR text and to include an additional required action related to calibration of the CVCS ion exchanger bypass valve.

Revision 2 provided a basis for extending use of PRC-01 resin to any condition where the effective neutron multiplication factor is less than 1.0, consistent with the plant restrictions identified herein. Revision 2 also incorporated format and content changes necessary to comply with the changes to 10 CFR 50.59.

Revision 3 removes a requirement that the PRC-01 resin must be taken out of service when hydrogen peroxide concentration in the RCS is greater than 5 ppm. This requirement was originally provided to conservatively reduce exposure of the resin to oxidizing environments. Laboratory testing and subsequent plant experience indicates this restriction is not required when plant chemistry is maintained in accordance with EPRI guidelines. Revision 3 also provides some minor administrative documentation changes.

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**EVALUATION PSL-ENG-SEES-05-008  
REVISION 0**

**INSTALLATION OF M&TE INSIDE CONTAINMENT FOR SL2-15 AND SL2-16**

**Summary:**

As a result of a Turkey Point plant condition report it was determined that there are two locations inside the Unit 2 containment where conduit is routed very close to RCS piping. This condition could result in long-term thermal aging concerns for the affected cables.

This evaluation provides for the temporary installation of four battery-powered, self-contained temperature data loggers and associated temperature monitoring equipment (i.e., cable and sensors) inside containment. This equipment will remain inside containment for the SL2-15 and SL2-16 fuel cycles. Data will be downloaded after the SL2-15 fuel cycle and again after the SL2-16 fuel cycle, at which time the equipment will be removed.

The data loggers will:

1. provide accurate, location-specific temperature data, and
2. provide a basis for determining what corrective actions may be required.

Each of the four data loggers and remote temperature probes have been installed by splicing IEEE 383 qualified cable to the 1-foot of vendor supplied cable.

The evaluation includes an assessment of the following:

1. seismic interaction,
2. loads to existing structures/components,
3. hydrogen generation,
4. containment free volume and heat sink analysis,
5. combustible material loading,
6. interaction with the containment sump and effects on post-accident flow of water,
7. containment flood elevation,
8. electrical separation/interaction, and
9. chemistry/material impacts.

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### **SECTION 3**

### **RELOAD EVALUATION**

**PLANT CHANGE/MODIFICATION 04078**

**REVISIONS 0, 1 & 2**

**ST. LUCIE UNIT 2 CYCLE 15 RELOAD**

**Summary:**

This package provided the reload core design for St. Lucie Unit 2 Cycle 15 developed by Florida Power & Light Company (FPL) and Westinghouse Electric — Combustion Engineering (W-CE). The Cycle 15 core was designed for a nominal cycle length of 10,710 EFPH, based on a Cycle 14 length of 12,543 EFPH.

The primary design change to the core for Cycle 15 was the replacement of 72 irradiated fuel assemblies with 68 fresh Region T assemblies and 4 irradiated Region P fuel assemblies that were residing in the spent fuel pool. The fuel in the Cycle 15 core was arranged in a low leakage pattern. The mechanical design of the Region T fuel is essentially the same as that of the Region S fuel, and consists of “value-added” fuel pellets and the “guardian grid” design, first introduced in Cycle 11.

The implementation instructions provided in this modification required a full core off-load. The safety analysis of this design was performed by W-CE and by FPL using NRC approved methodologies.

The analyses for Cycle 15 support a maximum steam generator tube plugging level of 2,520 tubes per steam generator (30% average) with a maximum asymmetry of 600 tubes, including the corresponding reduction in RCS flow. The reduction in RCS flow was approved by the NRC in January 2005 via Technical Specification Amendment 138.

Revision 1 incorporated a redesigned core loading pattern. The reason for this change was the extended Cycle 14 operating cycle, which resulted in a reduced energy requirement for Cycle 15. The redesigned core was analyzed to meet all applicable design requirements.

Revision 2 addressed changes corresponding to the final 30% steam generator tube plugging analysis approved by the NRC. This revision also addressed unrecovered debris in the lower reactor vessel and its potential impact on fuel.